

Rhodora

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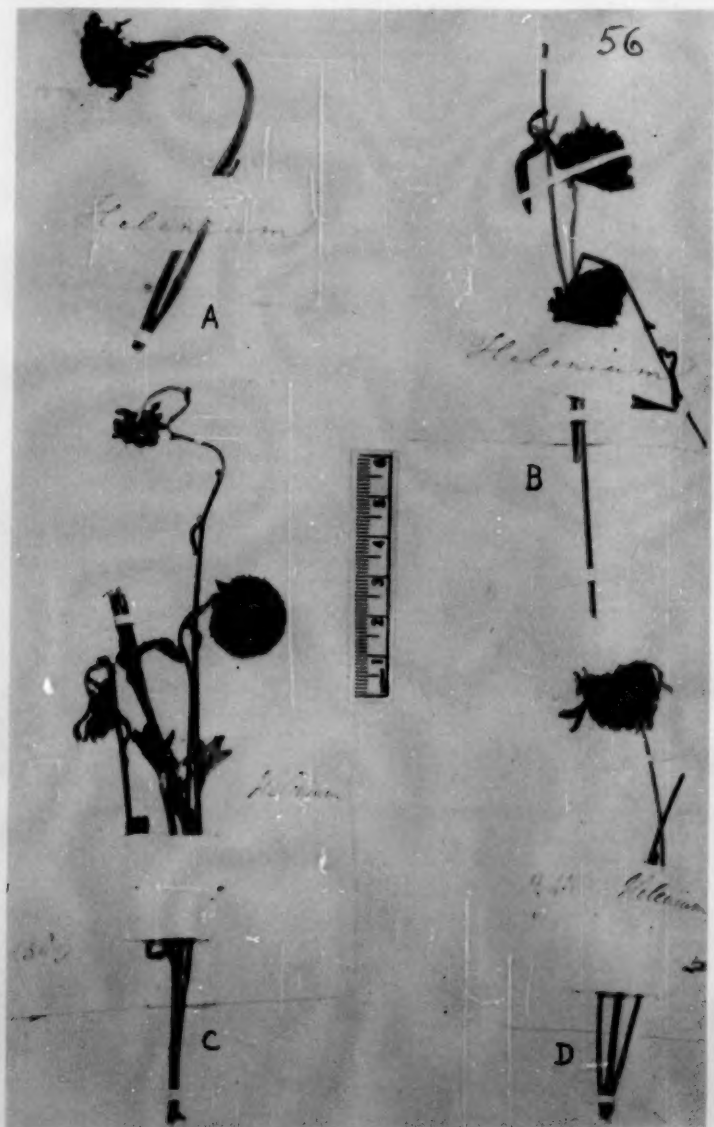


PLATE 1227. Page 52 of the Herbarium of Thomas Walter at the British Museum. FIG. A. Lectotype of *Helenium vernal* Walt. FIG. B. Syntype of *Helenium aestivale* Walt. FIG. C. Lectotype of *Helenium aestivale* Walt. FIG. D. Lectotype *Helenium serotinum* Walt.

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THE BINOMIALS OF HELENIUM IN WALTER'S FLORA CAROLINIANA

HOWARD F. L. ROCK

IN the course of a recent revision (unpublished) of the decurrent-leaved species of the genus *Helenium* L., it became necessary to critically evaluate the binomials used by Thomas Walter in the genus for his *Flora Caroliniana* (1788). The general importance of the *Flora Caroliniana* in North American taxonomy and particularly in that of the southeastern United States has been noted by Blake (1915), Maxon (1936) and more recently by Totten (1956). The significance of Walter's treatment of the genus *Helenium* lies in the fact that he created three new binomials within the genus. The identity of these binomials has long been intriguing, the more so in that they ostensibly did not apply to the even then highly segregated species, *Helenium autumnale* L.

In evaluating these binomials there are two direct sources of evidence and data. The first of these, the descriptions provided in the *Flora Caroliniana*, is unfortunately rather meagre, the descriptions being quite short. Therefore, for clarity of exposition and ease of reference, the text of Walter's treatment is reproduced below. The second of these sources is Walter's herbarium, which is preserved at the British Museum of Natural History. Inasmuch as John Fraser carried Walter's personal herbarium to England at the same time as he did the manuscript of *Flora Caroliniana*, it can be presumed that one was to serve as a supplement to the other. Nevertheless, it seems that the specimens of Walter's herbarium have either been

ignored or else overlooked in previous evaluations of the binomials. To these two sources can be added the modern knowledge of the Southeastern flora and these provide the basis for the interpretation and disposition presented herein.

327. *HELENIUM*. *Receptaculum* disci nudum, radii paleaceum. *Pappus* margo 8-partitus. *Calyx* simplex multipartitus. *Corollulae* radii 3 4 vefidae *discus* semiglobosus.
- vernale* 1. foliis oblongis alternis integris, floribus solitariis terminalibus luteis, petalis radii (24) trifidis.
- aestivale* 2. foliis oblongis integris, flosculis radii sex luteis quadrididis, disco purpureo, pappo subsetaceo.
- serotinum* 3. foliis serratis sessilibus caule laevi, floribus luteis, corollulis radii duodecim.
- autumnale* foliis serratis decurrentibus, caule ramoso alato, flosculis radii 12 luteis, disco purpureo aliquando geminato.

The description of *Helenium vernale* sensu Walt. can be applied to two of the vernal species of *Helenium* found in the Southeastern Coastal Plain, *Helenium Nuttallii* A. Gray and *Helenium pinnatifidum* (Nutt.) Rydb. The description fits either one equally well, with the exception of the adjective "integris." The entire-margined condition of the leaves is more characteristic of *H. Nuttallii* than it is of *H. pinnatifidum*. Nevertheless, *H. pinnatifidum* very often occurs with entire-margined basal leaves, particularly so in the Florida-Georgia area of its distribution. Over the course of the years, however, *H. vernale* Walt. has been interpreted as applying to the same taxon as *H. pinnatifidum* (Nutt.) Rydb.

Morphologically, *Helenium pinnatifidum* is characterized by having pubescent achenes, peduncles and involucrel bases that are pubescent, mid-cauline leaves that are only shortly decurrent (4 mm. or less) along the stem and by radical leaves that are usually pinnatifid in outline and not with petioloid bases. The distribution of *H. pinnatifidum* is in the outer portions of the Coastal Plain, more so than *H. Nuttallii*, and extending farther southeastward into peninsular Florida and northeastward into southeastern North Carolina. However, a simple check of the specimen (Fig. A) in the Walter Herbarium that most closely fits his description¹ reveals that the achenes are glabrous and

¹ Morphological data provided by Mr. W. T. Stearn of the British Museum of Natural History.

that the peduncle is glabrous as well. These characters are diagnostic of *H. Nuttallii* and the author is convinced that if the midcauline leaves were present on the specimen they would be conspicuously decurrent and that the radical leaves would be more entire rather than pinnatifid and would have petioloid bases. In addition, *H. Nuttallii* has a distribution that is more toward the inner portion of the Coastal Plain than *H. pinnatifidum* and is the only species of the two in question that occurs with regularity in Berkeley County, South Carolina. Moreover, the pappus scales of the Walter specimen correspond more closely to the stereotype of the pappus scales of *H. Nuttallii* than they do to that of *H. pinnatifidum*. Regrettably, the variable nature of the pappus scales in both taxa is such that there is a degree of overlapping and intergradation in the size and shape of the scales to the extent that the pappus scale characteristics are not as differential criteria as those presented above.

In the course of time, then, the binomial *Helenium vernale* has come to be misapplied to the taxon which was rightfully named *H. pinnatifidum* (Nutt.) Rydb., while the name *H. Nuttallii* A. Gray, which now becomes a synonym, has usurped the rightful position of *H. vernale* sensu Walt. The importance of the specimen in the Walter Herbarium and its preservation cannot be overstressed in relation to the binomial, for were it not for the specimen, the binomial would have to be declared a *nomen dubium* inasmuch as neither the epithet nor the brief description are sufficient to resolve the problem of its correct application.

It is the author's considered opinion that the binomials *Helenium aestivale* Walt. and *Helenium serotinum* Walt., long held as *nomina dubia*, do not have application to any of the species of *Helenium*, and most particularly not to any of those species encountered in the flora of the Southeastern United States. It is my belief that these two binomials apply instead to the genus *Gaillardia*, and that Walter made no distinction between the genus *Helenium* L. and the genus *Gaillardia* Fougx. (1787).² This is not so surprising, for Walter classified his

² Walter was probably not aware of Fougereux's paper, due in part to the time lapse in communication between Europe and North America and in part to the obscurity of the original publication in relation to botany.

H. vernale along with the other species of *Helenium* in the *Flora* under the class *Syngenesia Polygamia Superflua*, even though by virtue of the neutral and sterile ray florets it patently belongs to the class *Syngenesia Frustraria*. Indeed, according to the interpretation presented herein, all the binomials of Walter in the genus *Helenium*, whether they be truly members of *Helenium* or *Gaillardia*, would be classified as pertaining to the *Syngenesia Frustraria* for both the vernal species of *Helenium* and the species of *Gaillardia* are characterized by neutral and sterile ray florets.

The three remaining specimens in the Walter Herbarium labeled *Helenium* are in fact specimens of *Gaillardia* Fougx. These specimens belong to the Section *HOLLANDIA* Biddulph (1944) of the genus *Gaillardia*. This section of the genus is based on the characters listed below:

1. Receptacle with small dentiform setae;
2. Style branches long and hispidulous;
3. Lobes of the disk corollas caudate-acuminate.

It is to be noted that the setiferous character of the receptacle usually associated with *Gaillardia* as a diagnostic generic character becomes less than distinctive within this section, especially in relation to the character of the receptacle in *Helenium*. In fact and in practice, no real distinction can be made between the genus *Helenium* and the section *HOLLANDIA* (*Gaillardia*) solely on the basis of the receptacular surface and its projections. Of these three *Gaillardia* specimens, two belong to the species *Gaillardia lanceolata* Michx. while the remaining one would be referred to *G. lutea* Greene according to present usage. Whether these specimens were collected in Berkeley County, South Carolina or not, is a moot question. Most likely they were collected to the southeast or southwest of Walter's area and probably by John Fraser who traveled in both South Carolina and Georgia (fide Maxon). Biddulph records *G. lanceolata* from Aiken County, South Carolina³ as well as from Georgia, Florida and thence westward into Texas. East of the Mississippi River, she records *G. lutea* from Baldwin County, Alabama and Brevard County, Florida.

³ Specimens of *G. lanceolata* are on deposit in the Duke University Herbarium from Sumpter Co., S. C. and Columbus Co., N. C.

The description of *Helenium aestivale* Walt. can certainly be applied to *Gaillardia lanceolata* Michx. The characters of oblong, entire leaves; few yellow rays; purple disk; and sub-setaceous (long-awned) pappus have no real meaning in relation to any species of *Helenium* that occurs in the Southeastern United States but do apply to *G. lanceolata*. In the same manner, if *Helenium serotinum* Walt. is equated with *G. lutea* Greene, then the description provided by Walter agrees with the particulars that Biddulph gives for that taxon.

The author is aware of the dangers and fallacies that can arise in interpreting descriptions in terms of specimens and *vice versa* but if the binomial *Helenium vernale* Walt. is to be maintained then *H. aestivale* Walt. and *H. serotinum* Walt. should also be maintained, for certainly the latter two binomials are no more dubious than the former. In view of the priority of the epithets of Walter over those of later authors and according to Article 65 of the *International Rules of Botanical Nomenclature* (7th ed.), which states that prior epithets must be reinstated, there being no obstacle to their reinstatement, the following new combinations are proposed:

***Gaillardia aestivale* (Walt.) H. Rock, comb. nov.⁴**

Helenium aestivale Walt. Fl. Carol. 210. 1788.

Gaillardia lanceolata Michx. Fl. Bor.-Am. 2: 142. 1803.

***Gaillardia serotinum* (Walt.) H. Rock, comb. nov.⁵**

Helenium serotinum Walt. Fl. Carol. 210. 1788.

Gaillardia lutea Greene Pittonia 5: 57. 1902.

The remaining binomial used by Walter in the *Flora* is *Helenium autumnale* sensu Walt. (non Linnaeus). This binomial is not represented by a specimen in the Walter Herbarium. However, from the description and from the epithet, it is evident that what Walter considered to be *Helenium autumnale* L. is *Helenium flexuosum* Raf. (*H. nudiflorum* Nutt.) The decisive factor in this interpretation is the phrase "disco purpureo", one of the most obvious characters that serves to distinguish *H. flexuosum* from *H. autumnale*. However, in the light of the widely variable and descriptive polynomial synonymy

⁴ Lectotype: *Helenium aestivale* Walt., specimen No. 235, Walter Herbarium (BM), (Fig. C).

⁵ Lectotype: *Helenium serotinum* Walt., specimen No. 243, Walter Herbarium (BM), (Fig. D).

listed under *H. autumnale* by Linnaeus (1753), Walter's inclusion of the later defined *H. flexuosum* with *H. autumnale* is indeed warranted. Even though *H. flexuosum* is classified on technical characters along with the vernal-flowering species of *Helenium* (*Leptopoda* Nutt.), its actual flowering period in Walter's area ranges from mid-June through late October. It is the author's personal experience that *H. flexuosum* is one of the conspicuous and most abundant composites in the immediate vicinity of Walter's grave and former garden and of that area of South Carolina in general.

An alternate possibility is that *Helenium autumnale* sensu Walt. is the same as *H. brevifolium* (Nutt.) Wood. However, *H. brevifolium* is distinctly vernal in its flowering habit and while rather endemic in the nature of its distribution northward of the Gulf Coastal Plain, it is unreported from South Carolina. Moreover, the small number of ray florets cited by Walter would rule against *H. brevifolium* as a possibility, for in that taxon the number of ray florets is usually well in excess of twenty rays.

Even though Walter's descriptions are short and concise, the pattern of the phrasing and the order of arrangement of the species appears to have a significance that exceeds that of just mere description. If one allows some liberality in translation and a slight amount of change in the sequence of the phrases, but maintaining the order of the species, the following key can be constructed solely on the basis of the descriptive material provided by Walter.

1. Leaves entire and oblong
 2. Ray florets 24 in number, trifid; heads solitary, terminal and yellow; leaves alternate.....*Helenium vernale*.
 2. Ray florets 6 in number, 4-fid; disk purple; pappus sub-setaceous (long-awned).....*Helenium aestivale*.
1. Leaves serrate
 3. Leaves sessile (not decurrent); stem smooth (not winged); heads yellow; ray florets 12 in number.....*Helenium serotinum*.
 3. Leaves decurrent; stem winged and branched; disk purple; ray florets yellow and 12 in number...*Helenium autumnale*.

It is just such an analytical device that perhaps contains the answer to the contention raised by Dr. Baldwin in a letter⁶ to Stephan Elliott:

⁶ An undated letter from Dr. Baldwin of Georgia to Stephan Elliott of Charleston, South Carolina. The letter is now mounted with the lectotype of *Leptopoda puberula*

That the first mentioned species of *Galardia* is the *Helenium vernale* of Walter I contend—Walter would scarcely have omitted the fol. [ius] decurrent. [ibus] It is probable that he was ignorant of the species with decurrent leaves. . . .

From the schema above it can be seen that the decurrent-leaved condition has no bearing on the relation of *Helenium vernale* to the other three species of Walter's *Flora*. Rather, the question of whether the leaves are decurrent or not is raised only in effecting a decision between *Helenium serotinum* and *Helenium autumnale*. The fact that Walter did not state that *Helenium vernale* has decurrent leaves cannot be taken to infer that the leaves are non-decurrent, for by the same token, neither did he state that the leaves are sessile as he explicitly does for *Helenium serotinum*. Therefore, in view of the pattern and the phraseology of Walter's descriptions, it seems reasonable to assume that Walter intended the descriptive material to be diagnostic as well, even though he did not adopt a key-like format, an innovation which apparently originated in the same year (1788), with the publication of Lamarck's *Flore Française*.—
DEPARTMENT OF BOTANY, DUKE UNIVERSITY.

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MacBride in Ell. contained in the Elliott Herbarium of the Charleston Museum. In the above quotation, the *Galardia* referred to is *Galardia fimbriata* Michx., a *nomen reficiendum*, which is synonymous in part with *Helenium pinnatifidum* (Nutt.) Rydb.

NOTES ON A NEW HYBRID CAREX¹

EGBERT W. FELL

THE following is an extract from a paper entitled "Carex of Rock River Valley in Illinois" which Dr. Fuller, Mr. Ahles and I presented at the meeting of the Illinois State Academy of Science at Carbondale in 1955. It has not been published.

The *Carex* under discussion was discovered by me in April 1949 growing on the wooded gravel bluff of Rock River south of Rockford at the north edge of Camp Grant. The bluff, about 50 feet high, a part of Rock River terrace, is water-lain sand and gravel without loess or ice-borne till. It has a western exposure and is lightly shaded. It supports the remains of a prairie vegetation but is now wooded with *Quercus velutina*, *Q. alba* and *Q. macrocarpa*, a transition from prairie to mixed oaks, the trees having advanced upward from the very narrow flood plain. Associated plants are, beside a few choke-cherry bushes (*Prunus virginiana*), a mixture of prairie plants and mesophytes: *Bouteloua curtipendula*, *Leptoloma cognatum*, *Panicum scribnerianum*, *Aristida basiraema*, *A. oligantha*, *Carex meadii*, *C. pensylvanica*, *C. muhlenbergii*, *C. sprengelii*, *C. normalis*, *Claytonia virginica*, *Arenaria stricta*, *Dicentra cucullaria*, *Corydalis flavula*, *Draba reptans*, *Oxalis violacea*, *Dodecatheon meadia* and *Penstemon pallidus*.

The *Carex* grows in a patch about 75 feet in diameter on the crest of the bluff. During the past 7 years it has increased in size about one quarter. In the average winter the basal part of the plant stays green. Spring growth starts early, the thick staminate spike becoming conspicuous only a little later than *C. pensylvanica*. Achenes develop incompletely and infrequently, varying in different years. I have found no mature achenes.

I asked Mr. Ahles to write this description of the plant naming it for Dr. George Damon Fuller, who has been familiar with it from the time of its discovery. Last spring I sent Mr. Ahles, in Urbana, living plants of the hybrid, of *C. pensylvanica*, *C. laeviconica* and *C. meadii* from this area, but it was too late to

¹ A contribution from the Evelyn I. Fernald Memorial Herbarium of Rockford College, Rockford, Illinois.

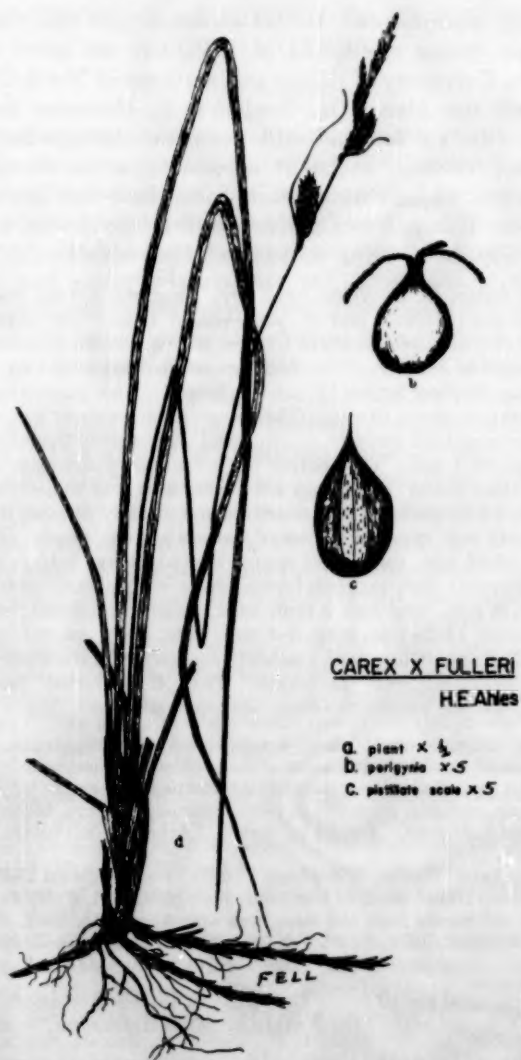


FIG. 1. CAREX X FULLERI H. E. Ahles, hyb. nov. Plant $\times \frac{1}{2}$. Pistillate scale and perigynium $\times 5$.

do crossing experiments. It was expected that this would be undertaken during the spring of 1956, but the move of Mr. Ahles from University of Illinois to University of North Carolina interrupted the plan. Dr. Frederick J. Hermann and Dr. Theodore Just are familiar with the plant through herbarium specimens. There is apparent agreement as to its probable hybrid origin, though its location, just where the service area of the Base Hospital was during the first world war, suggests the possibility of its being an accidental introduction.

Carex \times *fulleri* H. E. Ahles, *hyb. nov.* A sterile hybrid possibly of *Carex laeviconica* Dewey and *C. pensylvanica* Lam. The plant forms small tufts of 2 to 5 erect culms at the end of long, slender rhizomes which reach a length of 1-2 dm. The rhizomes are covered with long, narrow, overlapping, fibrillose scales 12 mm. in length. The internodes on the rhizome measure about 10 mm. The leaves, 4 mm. wide or less, are glaucous, scabrous on both surfaces, chiefly basal, and overtop the inflorescence by as much as 1 dm. The sharply angled culms, 5 dm. tall, are very thin, less than 1 mm. thick, and are scabrous at the top. The lowest pistillate spike is sessile or very short stalked, usually distant, upper one or very rarely two, crowded at base of staminate spike, sessile; all oblong-cylindric, 10-25 mm. (in general nearer 10 mm.) long, 5-10 mm. broad, densely flowered; dark purplish-brown scales with lighter central band, acuminate, 5 mm. long and 2 mm. wide, midrib prominent; staminate spike terminal, 15-30 mm. long, 3-4 mm. wide, straw colored; perigynia brown, dull, 3 mm. long, ovoid, gradually contracted to the short, smooth, bidentate beak, 0.2 mm. in length. Pistil three-parted; achene not developed, but the immature achene sharply triangular. Fig. 1.

Culmis 5 dm. altis, erectis; foliis 4 mm. sive minus latis, glaucis, scabrosis. Spicis femineis sessilibus sive subsessilibus, oblongo-cylindricis, 10-25 mm. longis, 3-10 mm. latis, dense floribus intertextis. Perigyniis fulvis, surdis, 3 mm. longis, ovoideis, gradatim in breve rostrum, glabrum, bidentatum 0.2 mm. longum contractis. Pistillo tri-partito. Achenio non evoluto sed acute triangulari.²

TYPE SPECIMEN: Illinois, Winnebago County, wooded gravel bluff of Rock River at Camp Grant, south of Rockford, June 16th, 1954, *E. W. Fell 54-489*. Additional collections from the same area are: April 29th, 1949, *E. W. Fell 49-115*; May 23rd, 1953, *E. W. Fell 53-147*; July 6th, 1953, *E. W. Fell 53-679*.

Specimens cited are all in the University of Illinois Herbarium. Duplicate specimens are in the Illinois State Museum Herbarium.³—ROCKFORD, ILLINOIS.

² Assistance was given by Professor J. L. Heller, Head of the Department of Classics, University of Illinois, in preparing the Latin description.

ADDITIONS AND EXTENSIONS TO THE FLORA
OF MANITOBA

J. C. RITCHIE

AN opportunity to spend part of the summer of 1955 in north-west Manitoba enabled the writer to make detailed local studies in two regions which had not been explored by any botanist. Four additions, and certain notable extensions to the known flora which resulted from this work are reported here. Detailed floristic and ecological accounts will be published elsewhere. The information which is reported here was not available in time to be included in the forthcoming flora of the province by Dr. H. J. Scoggan. The northwest region of Manitoba has received little attention from botanists, and only the collection of Baldwin (1953) provides representative information about the area. The present material was collected from two main areas, at MacBride Lake (56° 52' N., 99° 57' W) and Tod Lake (56° 45' N., 101° 47' W). In the following account the writer's collection numbers are shown in italics and the Herbaria of the University of Manitoba and the Department of Agriculture, Ottawa are referred to as MAN and DAO respectively.

Woodsia alpina (Bolton) S. F. Gray. Tod L. 1264. Only one locality for this plant was established; it was found in a deeply shaded cliff ledge on the north-facing side of a high outcrop ridge on the northwest shore of Tod Lake. This is the first authentic record for the province; reports by Macoun (1890) and Lowe (1943) have not been substantiated by any specimens.

Cystopteris dickieana Sim. Tod L. 1263. Growing in close association with *Woodsia alpina* (1264), this species was recorded from only that locality. This is the fourth record of the plant from Manitoba, the others being at Churchill (Ritchie, 1956) and from two localities near The Pas, about 300 km. south of the present locality (cf. map in Löve and Freedman, 1956).

Dryopteris phegopteris (L.) Christens. Tod L. 1257. The only record, it was noted in rich wet soil below a small beaver dam under black-spruce and poplar. This is the first specimen collected in the province; Macoun's (1890. p. 269) report that it is "rather scarce along Lake Manitoba and the Porcupine Mountains, Man." is unsupported by any specimens.

Potamogeton robbinsii Oakes. Macbride L. 1214. This aquatic was found in local abundance in certain shallow arms of MacBride Lake where it forms a broad submerged (at about 1 m.) zone of vegetation with *P. alpinus* var. *tenuifolius*. This is the second record from Manitoba; a

specimen was collected by B. J. Marek in 1936 (DAO) from Bissett, in the southeast corner of the province, about 750 km. from the present station.

Schizachne purpurascens (Torr.) Swallen. Tod L. 1247. Recorded in well drained mineral soil on a south-facing, unshaded site on the summit of a high outcrop ridge, this extends northwards the area of this species in the province; the previous northern limit was at Cross Lake (Scoggan, 1950), about 250 km. southeast from the present station.

Carex heleonastes Ehrh. MacBride L. 968, 1024, 1147, 1185. Never found in local abundance, this apparently rare sedge was discovered with surprising ease in several peat bogs in the area. Here it is confined to large cushions of *Sphagnum warnstorffianum* and *Camptothecium nitens*, where it is associated with *Andromeda polifolia*, *Vaccinium oxycoccus*, *Rubus acaulis*, *Salix pedicellaris* var. *hypoglauca* and *Carex limosa*. Due to the lack of adequate material from the province—the only other specimens of the *C. heleonastes-amblyorhyncha* complex are of *C. amblyorhyncha* from Churchill (Böcher, 1952)—it is not yet possible to provide representative information about this species.

Carex leptalea Wahl. MacBride L. 1143. Apparently a plant of restricted ecological amplitude, it was collected from the peaty banks of a small muskeg stream where it was associated with *Carex paupercula* and *Caltha palustris*. This record merely extends the northern limit of the plant in Manitoba (it is known from Keewatin) from The Pas and Churchill into the northwest corner of the province.

Carex abdita Bickn. Tod L. 1242. A new record for the province, a single colony was found on the southern slope of the high outcrop ridge which bounds the northwest shore of Tod Lake. This record comprises a remarkable northern extension of this transcontinental American plant whose main area is in temperate latitudes.

Carex lasiocarpa Ehrh. var. **americana** Fern. MacBride L. 1219, 1221. Both locally abundant and ecologically important this sedge forms a narrow zone at the periphery of certain lake-bogs, associated with *C. rostrata*, *Calla palustris* and *Menyanthes trifoliata*. This record extends northwards the area of the plant within the province from near Cedar Lake (Scoggan, 1950), a distance of about 400 km.

Carex oligosperma Michx. Tod L. 1270. In local abundance at a single locality, it forms a zone of dominance in a small swampy depression over clay. This is the second authentic record and makes an extension northwards of 800 km. from the first locality which is in the southeast corner of the province. A new variety of this species has been discovered at Churchill, on Hudson Bay (described by Raymond in Ritchie, 1956).

Acorus calamus L. MacBride L. 1228. A single colony was found, growing in the marginal bog vegetation of a shallow arm of MacBride Lake. This record extends the northern limit of the plant by 250 km. from Cross Lake where it was collected by Scoggan (1950).

Salix pseudocordata (Anderss.) Rydb. MacBride L. 1113. A single plant of this was noted, growing in a muskeg where it was concomit-

ant with *Picea mariana*, *Salix myrtillofolia*, *Rubus chamaemorus*, *Sphagnum fuscum*, *S. warnstorffianum* and *Aulacomnium palustre*. This is the first record for Manitoba and it comprises a considerable (1000 km.) north-eastern extension from the nearest known station, at Cypress Hills in southwest Saskatchewan where it occurs as an outlier of the main area of the plant which is in the southern Cordillera (Breitung, 1954).

Salix hebecarpa Fern. (= ? *S. athabascensis* Raup) MacBride L. 990, 1029. Two localities were established for this willow, and in both instances it grew in muskeg vegetation, associated with *Picea mariana*, *Betula glandulosa*, *Ledum groenlandicum* and other typical muskeg plants. The differences between this species and *S. athabascensis* are unconvincing, and the latter scarcely merits specific rank. *S. hebecarpa* is known only from Alaska (Hultén, 1943 p. 520-1) and the Gaspé Peninsula (Scoggan, 1950a p. 173). Possibly these are eastern and western subspecies of a single species, together forming a more or less continuous area in N. America. This record extends the provincial area northwards by about 600 km., from Riverton (Scoggan, 1953).

Salix gracilis Anderss. var. ***textoris*** Fern. MacBride L. 1205. This was recorded only from certain rare stands of white-birch on raised peat ridges. It extends northwards by 300 km. the area of the plant from The Pas (collected by W. Krivda, MAN).

Salix arbusculoides Anderss. MacBride L. 985, 989. This was recorded from muskeg in two localities. It is the second record for the province, the other being at Churchill, the eastern limit of the entire area of the plant.

Arabis holboellii Hornem. var. ***collinsii*** (Fern.) Rollins. Tod L. 1253. Only one colony of plants was found, in dry soil on the southern slope of a high outcrop ridge at Tod Lake. This extends further the northern limit of this plant in the province from the locality established by Freedman (MAN) near Flin Flon, about 250 km. from the present area.

Potentilla arguta Pursh. Tod L. 1246. The only specimen collected from the area, it was found in dry mineral soil on the south-facing slope of the summit of a high outcrop ridge. This extends northwards by 300 km. (from The Pas) the area of the plant in northwest Manitoba.

Potentilla pensylvanica L. var. ***pensylvanica***. Tod L. 1251. In the same locality as the previous two species, this record extends the area by 250 km. from the previous northern limit for the province at Cross Lake (Scoggan, 1950).

Oxytropis splendens Dougl. Tod L. 1241. This was the only locality in the areas which were surveyed; here it was concomitant with the three previous species and *Artemisia caudata*. This record extends the area in the province by 600 km. northwards from the locality at Cowan, Duck Mountain (Scoggan, 1952).

Artemisia caudata Michx. Tod L. 1245. Associated with the last four species, it was confined to dry, open sites on the summit of the ridge on the northwest shore of Tod Lake. This record extends the area northwards from Knee Lake (Scoggan, 1951) by about 300 km.

Certain of these additions and extensions are of phytogeographical interest. While it is apparent that the flora of northern Manitoba is incompletely known at present, several of the records which have been enumerated constitute remarkable outliers of the main areas of the plants, while others are rare or local, even in regions which have been explored in greater detail. Of these plants, *Woodsia alpina*, *Cystopteris dickieana*, *Schizachne purpurascens*, *Carex abdita*, *Arabis holboellii* var. *collinsii*, *Potentilla arguta*, *Potentilla pensylvanica* var. *pensylvanica*, *Oxytropis splendens* and *Artemisia caudata* were recorded only from the relatively high ridge which runs parallel to the northwest shore of Tod Lake. This ridge is of a somewhat exceptional geological nature, having arisen by considerable faulting between two series of sedimentary rocks (Milligan, 1952). Otherwise, by far the greater area of this entire region is of low relief, consisting of undulating glacial till ridges with the intervening depressions filled by lakes, muskegs and bogs, the whole showing little diversity of habitat and bearing a relatively poor flora, typical of much of the northern forested regions of the Canadian Shield. On this ridge on the exceptionally well drained upper slopes with a southern aspect, above small cliffs and therefore relatively unshaded by trees, were found *Schizachne purpurascens*, *Carex abdita*, *Arabis holboellii* var. *collinsii*, *Potentilla pensylvanica* var. *pensylvanica*, *Oxytropis splendens* and *Artemisia caudata*. Without exception these occurrences, near the northern limit of the continuous coniferous forest, are considerably beyond the main areas of these species, all of which are more typical of the southern deciduous forest and prairie vegetation zones. Further, the presence of exceptional cliff habitats provides, on the north-facing slopes, conditions of shelter and moisture which are suitable for such ecologically specialized ferns as *Woodsia alpina* and *Cystopteris dickieana*. It is suggested that these records provide some corroboration, at the regional flora level, of the thesis of Böcher (1951) that many discontinuities of area can be explained satisfactorily in terms of ecological factors.

The writer wishes to record his thanks to Dr. H. J. Scoggan who kindly provided much of the information about distribution within Manitoba. This work is being supported by generous

grants from the National Research Council of Canada.—DEPARTMENT OF BOTANY, UNIVERSITY OF MANITOBA, WINNIPEG, CANADA.

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ANDROPOGON PRAEMATURUS,
A FUNGUS-INDUCED MONSTROSITY¹

RICHARD W. POHL

Andropogon praematurus Fernald (RHODORA 42: 413-415, 1940) was described as a new species of the section *Schizachyrium*, differing from *A. scoparius* in the following features:

1. Possession of only one pedicel or pedicellate spikelet at each node of the rachis—"Most remarkable, the sessile perfect spikelets, instead of being accompanied by a pair of truncate bearded pedicels or these terminated by mere rudiments, usually are accompanied by a single well developed staminate pedicelled spikelet." (p. 414)
2. Well-developed, staminate pedicellate spikelets.
3. Extremely early flowering.
4. Small size of plant.

Through the courtesy of Dr. Reed Rollins, it has been possible to examine the type specimen of *A. praematurus* (Fernald and Long 10,092, GH) and the other cited material of this species.

As described by Fernald, all specimens show one sessile and one pedicellate spikelet at each node of the rachis. This disposition of the spikelets is exactly the same as in all other species of *Andropogon* known to the author. Professor Fernald's statement that other species of this genus are different in having two sterile pedicels accompanying each spikelet is a misinterpretation. A detached unit of the inflorescence in the genus *Andropogon* consists of: 1. a sessile spikelet, 2. a pedicel bearing a pedicellate spikelet or a rudiment, and 3. the rachis internode which would normally bear the next distal similar unit. Such a detached unit might be interpreted as having two pedicels, but this is not the case. *A. praematurus* is therefore not exceptional in its inflorescence structure, a fact which has been pointed out by Agnes Chase (Man. Grasses U. S., Rev. Ed. 1950, p. 755).

The pedicellate spikelets of the type of *A. praematurus* and all other specimens of this "species" available to me do indeed have well-developed pedicellate spikelets. This development, however, is occasioned by the fact that all of them are heavily infected by a kernel smut (*Sphacelotheca* sp.). This fungus

¹ Journal paper No. J-2972 of the Iowa Agricultural Experiment Station, Ames, Iowa. Project No. 1136.

was kindly identified for me by Dr. J. C. Gilman. The pedicellate spikelets are not staminate, as stated by Fernald. The entire flowers of both the sessile and pedicellate spikelets are completely destroyed by the fungus infection. Fernald's plate of the inflorescence of the type specimen (RHODORA, 42: pl. 626, fig. 3) well illustrates the typical smut pustules formed by *Sphacelotheca* sp.

Probably no plant species has ever been described from an entirely healthy individual, so the mere presence of a disease on the type specimen would not necessarily invalidate a new species. In the case of *A. praematurus*, however, all of the structural and physiological peculiarities upon which the species was differentiated may be ascribed to the well-known effects of systemic smut infection—malformation of organs, small stature, and early blooming.

The type of *A. praematurus* is to be regarded as a monstrosity induced by disease, and hence the species is to be rejected under the provisions of article 77 of the 1952 edition of the International Rules of Botanical Nomenclature. It could also be rejected under the provisions of article 76, since the appearance of the type is due to the combination of host and parasite, which are two genetically incongruous elements.

Some of the specimens which have been designated as *A. praematurus* have pubescent sheaths. These have been designated *A. praematurus* f. *hirtivaginitus* Fernald (RHODORA 44: 383, 1942). These are also smutted individuals of *Andropogon*, section *Schizachyrium* and this name must also be rejected upon the same basis as that of the species.

There is considerable variation in both vegetative and paraflores structure of the specimens which have been denominated *A. praematurus*. It is possible that several species of *Andropogon* are involved, but in view of the fact that systemic smut infections may have altered all of the structures, it is probably pointless to attempt to determine the species.

RUBUS CHAMAEMORUS IN THE CANADIAN LAKEHEAD.—The publication of the Occurrence of *Rubus Chamaemorus* L. in Minnesota,¹ brought to light additional information pertaining

¹ LAKELA, O., RHODORA, 56: 272-273. 1954.

to its midcontinental distribution. In a communication from Mr. Claude E. Garton, of Port Arthur, references were made to his own field observations and collections of the species and to those of Dr. T. M. C. Taylor in the Canadian Lakehead.

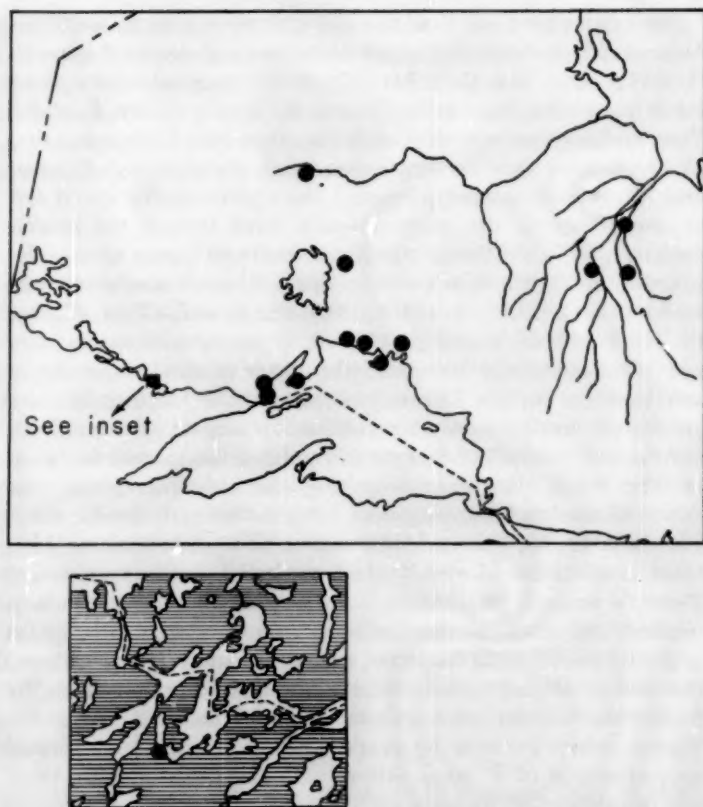
Dr. James H. Soper, University of Toronto, made available a list of collections of this species including those of Dr. Taylor and his associates with an unpublished manuscript map. With this information at hand, an attempt has been made to redefine the southern limit of the range of this arctic species and to relate to the distribution pattern on the Canadian side the single known station at Basswood Lake, Minnesota, some 120 miles west from Lake Superior.

The Canadian botanists collected the plant on Lake Superior north of the border more than 20 years ago. Mr. Garton, in 1952, discovered it on the north side of Pigeon Bay astride the International Boundary. Its absence on the south side is notable. The species is unknown in parts of Minnesota adjoining the Thunder Bay District.

Obviously the center of the interior distribution parallels the north shore of Lake Superior. The disjunct sites to the north and northeast are in Patricia and Cochrane Districts respectively. Westernmost is the Basswood Lake colony at 48° 07' N. lat. and 92° 43' W. long., the latitude approximating that of the Pigeon Bay colony, defining the southerly limit of the range.

With the exception of the first citation, from Mr. Garton's letter the collections herewith listed are deposited in the Herbarium of the University of Toronto, with the original distribution map, presumably plotted by Dr. Taylor, which was amended and adapted for its present use.

THUNDER BAY DISTRICT: In a sphagnum swamp at Amethyst Harbor, 23 mi. n.e. of Port Arthur, June 17, 1933. *Claude E. Garton*. Open wet sphagnum bog, north side of Pigeon Bay, Lake Superior, Crooks Twp., July 16, 1952. *Claude E. Garton 1865*. In sphagnum in spruce bog, Fork Bay, Sibley Twp., (lat. 48° 20' N. long. 88° 50' W.), June 23, 1936. *T. M. C. Taylor et al. 1286*. Spruce-cedar swamp, Rossport, (appr. 48° 45' N. 87° 15' W.), Aug. 11, 1937. *R. C. Hosie et al. 1996*. In black spruce, Bluejay muskeg, Schreiber, (appr. 48° 45' N. 87° 15' W.), June 30, 1937. *R. C. Hosie et al. 1998*. Inland lake, east side of Patterson Is., Slate Islands, July 28, 1937. *R. C. Hosie et al. 1999*. Open spruce swamp, Marshy Lake, vicinity of Peninsula, (appr. 48° 45' N. 86° 15' W.), July 13, 1939. *T. M. C. Taylor et al. 1445*. Sphagnum bed, Onaman Lake, June 18, 1950. *W. L. Klawe 60*. Algoma District: "Clay Belt," June, 1905. *A. Henderson*. COCHRANE



MAP 1. *RUBUS CHAMAEMORUS* in the Interior of North America.

DISTRICT: In bog, among sphagnum, Smoky Falls, (appr. $50^{\circ} 05' N. 82^{\circ} 10' W.$), July 24, 1935. *Jim Whelan* 79. PATRICIA DISTRICT: Spruce swamp near Nikip Lake, June 20, 1950. *A. T. Cringan*, *P. 18*. Clearing, edge of bush, Lake Attawapiskat, Aug. 18, 1939. *W. B. Scott* 134.

The writer wishes to express gratitude to Mr. Claude E. Garton, who first brought to attention the occurrence of the species in the Canadian Lakehead, to Dr. James H. Soper, who kindly gave the listing of the collections of the Toronto Herbarium and to Dr. J. B. Carlson, University of Minnesota, Duluth Branch, for adapting the distribution map.—OLGA LAKELA, UNIVERSITY OF MINNESOTA, DULUTH BRANCH.

PRUNUS AMERICANA VAR. LANATA A SYNONYM OF *P. NIGRA*.—As originally published, *Prunus americana* var. *lanata* Sudworth (U.S.D.A. Div. For. Bull. 14: 237, 1897) was a substitute name for *P. americana* var. *mollis* "Torrey & Gray . . . not *P. mollis* Torr." This was in accord with the American Code regulation which treated species, subspecies, and varieties as of equal rank for nomenclatural purposes; the epithet *mollis* could not be used twice in the genus *Prunus*, even though the second use might be in a different category. Sudworth gave no description and no distribution for the plant. Since *P. americana* var. *mollis* T. & G. (Fl. N. A. 1: 407, 1840) and *P. mollis* Torr. (Comp. Fl. N. & Middle States p. 199, 1824) are both taxonomically and nomenclaturally identical (the latter is cited as synonym and basonym for the former, the same differentiating features are stated, and no particular distribution is assigned for either), the "not *P. mollis*" of Sudworth's publication cannot be taken at face value. It meant only that the identical epithet was not to be used in both categories. A year later, Sudworth (Div. For. Bull. 17: 75, 1898) added a statement of distribution, "Missouri to northern Mexico," which excluded the type region of Torrey's original publication. An emended circumscription is implied, but since no description or reference to a description is given, the emendation is not actually made. If it had been, the newly defined taxon could not bear the name given by Sudworth, because the ultimate type of *lanata* is *P. mollis* Torrey, which for over 60 years has been unanimously treated as a synonym of *P. nigra* Aiton. On the basis of type, then, and regardless of varying applications of the names, *Prunus americana* var. *lanata* and *P. lanata* (Sudw.) Mackenzie & Bush are both synonyms of *P. nigra*. The plant which passes as *lanata* is common in most of Texas, chiefly in limestone areas (in the eastern Pine Belt are forms with thinner and narrower leaf blades, suggesting introgression with *P. umbellata* Ell.). It is certainly not to be referred to *P. americana* Marshall. It is a solitary small tree, not forming thickets from rhizomes; it rarely has spinescent branchlets; the leaf blades are acute to abruptly acuminate, sparsely to densely pubescent beneath even in age; the fruit is purple with a heavy bloom, not red or yellow. I can find no satisfactory grounds for separating it

from *P. mexicana* S. Wats., Proc. Amer. Acad. 17: 353, 1882, described from northern Mexico (Coahuila). Detailed information on the northeastern limit of this species, and possible introgression with others, must await local studies in the Ozark and Mississippi Valley regions.—LLOYD H. SHINNERS, SOUTHERN METHODIST UNIVERSITY, DALLAS, TEXAS.

HEDYOTIS ROSEA IN ARKANSAS.¹—On March 20, 1953, collections of *Hedyotis rosea* Raf. were made from scattered patches in the low fields and lawns at Conway, Faulkner County, Arkansas.

The plants had large pink corollas, ranging in length from 7.5 to 12.5 mm. and with length of corolla tubes ranging from 4–7 mm. The calyx length ranged from 2.5–4 mm. with lobes 0.25–0.5 mm. in length. The throats of the corollas were hairy. The seeds were about 1 mm. long and 0.2–0.3 mm. wide. The upper surfaces of the corolla lobes were densely clothed with minute, short, flat, broad-based enations easily seen with magnification. The basal leaves were spatulate. The joined stipules were almost truncate, to rounded, to very short- and broadly-triangular at the summit.

Originally described by Rafinesque² from Louisiana (probably), *Hedyotis rosea* has recently been reported from Oklahoma by U. T. Waterfall.³ This evidently is the first report from Arkansas.—JEWEL E. MOORE, ARKANSAS STATE TEACHERS COLLEGE.

NOTE ON ECHINOCHLOA MURICATA.—In a recent issue of this journal (RHODORA 58: 48. 1956) Fairbrothers indicates that the correct binomial for the indigenous barnyard grass is *Echinochloa muricata* (Beauv.) Fernald. This conclusion appears to be correct, but there are some errors in citations of authority among the binomials he cites as synonyms.

As the author has indicated, the first legitimate use of the epithet *muricata* for this taxon was by Beauvois, who published the binomial *Setaria muricata* in 1812. According to Art. 81

¹ Contributions from the Botanical Laboratory, the University of Tennessee, N. Ser. 174.

² RAFINESQUE, C. *Flora Ludoviciana* 77. 1817.

³ WATERFALL, U. T. The Identity of *Hedyotis rosea* Raf. RHODORA. 55: 201–203. 1953.

of the Stockholm Code, this must be considered as the starting date for the epithet for purposes of priority. In 1829 Kunth made the combination *Oplismenus muricatus* which was, in effect, a transfer of Beauvois' epithet. The corrected synonymy for this taxon, as far as the epithet *muricata* is concerned, is as follows:

Panicum muricatum Michx. 1803. non Retz. 1786.

Setaria muricata Beauv. 1812.

Oplismenus muricatus (Beauv.) Kunth 1829.

Echinochloa muricata (Beauv.) Fern. 1915.

To place the name of Michaux in parenthesis, as the original author, gives an erroneous impression. As pointed out above, the epithet under discussion dates from 1812 when Beauvois used it in combination with *Setaria*. When *muricata* is used for this taxon, but in combination with other generic names, the citation of authority should show Beauvois (in parenthesis) as the original author. As long as the Homonym Rule stands in its present form, it is important for purposes of priority that care be used in the citation of authorities for those names containing an epithet which had been previously used for the same taxon but in an illegitimate combination.—JOHN R. REEDER, YALE UNIVERSITY, NEW HAVEN, CONN.

SCIENTIFIC BOOKS, LIBRARIES AND COLLECTORS:—For a long time few people seemed to be very much interested in the history of science. Of late years, due primarily to the efforts of a few devoted scholars, the study of science history has taken on a new air of respectability. The price that is paid for respectability, however, in this study as in all others, is the production of a flood of books on the subject—a few outstanding, most tolerable, and a few poor. Even the worst, to be sure, have some value, but their faults need to be kept constantly in mind lest error and omission take on the cloak of verity.

In 1954 there was published a book of some 300 pages entitled "Scientific Books, Libraries and Collectors," and subtitled "A Study of Bibliography and Book Trade in Relation to Science."¹ The authors, J. L. Thornton and R. L. J. Tully state in their preface that they have "endeavored to record the chief writings of every prominent scientific author . . ." They modestly add that "the professional historian of science will find little new in these pages, but the student of the subject, and the scientist searching for 'bibliographical gaps,' will find between

¹ The Library Association London.

two covers an accumulated wealth of material on the bibliography of science."

This book, it must be admitted, reads easily and pleasantly, as long as one has only a vague acquaintance with the subject. When, however, a botanist reaches page 127 and reads that the 10th edition of Linnaeus' "Systema Naturae" (1758-59) is "of special significance because it has been taken as the basis of modern botanical and zoological binomial nomenclature," he is inclined to be somewhat amazed—and amused. He is perhaps inclined to think that the "Hortus Cliffortianus" (1737) and "Genera Plantarum" ed. 5 & 6 (1754 & 1764), which are not mentioned, are of somewhat more importance than the "Classes Plantarum" (1738) and "Flora Suecica" (1746 & 1755), which are mentioned.

At page 165 one is surprised to be told that Bentham and Hooker's "Genera Plantarum" is a mere compilation—an assertion which, if true, would indicate that this great work was considerably less valuable than it in fact is. At page 213 one is told that the "Index Kewensis" is considered to be a bibliography—one thing that it is not! One wonders why, if this, the standard nomenclator for post-Linnaean botany, is included, we do not find mention of Tournefort's "Institutiones Rei Herbariae" or Caspar Bauhin's "Pinax Theatri Botanici," two of the important pre-Linnaean nomenclators. For that matter, one wonders why Richter's "Codex Botanicus Linnaeanus," which collects the botanical material from the Linnaean publications as well as providing an extensive bibliography of both the Linnaean titles and the pre-Linnaean titles, was omitted. One is distressed to find that no reference is made to J. Christian Bay's critical "Bibliographies of Botany"—surely one of the most important bibliographies that we have.

Mention is made of Pritzel's "Thesaurus . . ." but notice is given neither to Jackson's "Guide to the Literature of Botany . . ." nor Zuchold's various botanical bibliographic titles, all of which supplement Pritzel. Some other notable, and unforgivable, omissions which may be mentioned are "The Catalogue of the Library of the Royal Botanic Gardens, Kew" and its Supplement; Merrill and Walker's "Bibliography of Eastern Asiatic Botany" and Nissen's "Die Botanische Buch Illustration" both of which are copiously annotated. Likewise, the sales catalogs of the German firm of Junk are omitted. For that matter, the catalogs of any of the larger firms dealing in antiquarian natural history books are mines of information for the bibliographer. Abstracting journals, which are certainly useful bibliographic tools, also come off badly. "Botanical Abstracts" and its successor "Biological Abstracts" seem to have escaped the authors' notice. Absent also is reference to the very useful United States Department of Agriculture publication "Bibliography of Agriculture." Also among the missing is the "Journal of the Society for the Bibliography of Natural History." Finally, we note the omission of the "Union List of Serials," a work which lists the library holdings of upwards of 120,000 titles in the United States and Canada.

The next to the last chapter deals with "Scientific Publishing and Bookselling." Despite the subtitle of the book, one finds here very little about the book trade. The house of Caxton receives some discussion, and a few continental publishers of that period are mentioned. We look in vain for mention of the house of Plantin. Longmans, John Murray, and Macmillan are mentioned but we search without success for Lovell Reeve & Co., Wilhelm Engelmann, or Martinus Nijhoff. In the United States, only D. Appleton & Co. and McGraw-Hill Book Co. are considered worthy of note. No mention is made of the various university presses which here carry on so much of the scientific publication today. Finally, and rather importantly, no mention is made of the several presses which are responsible for the production of technical journals.

The final chapter, "Scientific Libraries of Today," vies with the preceding for the title of "worst chapter in the book." Only Great Britain and the United States are considered at all, and the latter very superficially. We are told of the destruction, during the last war, of the library of the Manchester (England) Literary and Philosophical Society. No mention is made of the destruction of the library of the Botanical Museum at Berlin-Dahlem or the other scientific libraries in that city. We are told of the libraries at Kew and the British Museum (N. H.), but no mention is made of the library of the old Royal Botanic Garden at St. Petersburg (now Leningrad), though its catalog receives brief mention. Nor does the splendid library at the Conservatoire Botanique in Geneva receive recognition. For this country, no mention is made of the great holdings of natural history books at the University of California, at Harvard, and at the United States Department of Agriculture—to mention but three.

This review deals with only a small portion of the field that Thornton and Tully claim to have covered. All in all, they have not done so good a job as one might have hoped—or as other reviews would lead one to expect. True, within its limitations, the book contains a great deal of information and is, therefore, of considerable value. Most of the sins committed are those of omission—but each fact and figure needs to be checked carefully before it is quoted.—GORDON P. DEWOLF, JR., BAILEY HORTORIUM, CORNELL UNIVERSITY.

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